

1. Introduction to Data Interpretation (DI)

Data Interpretation refers to the process of making sense of numerical data that has been collected, analyzed, and presented. Mastery of DI requires both arithmetic proficiency and logical estimation.

Common Formats

- **Tables:** Rows and columns containing raw or aggregated data.
- **Bar Graphs:** Rectangular bars with lengths proportional to values.
- **Line Graphs:** Points connected by line segments to show trends over time.
- **Pie Charts:** Circular statistical graphics divided into slices to illustrate numerical proportion.
- **Caselets:** Paragraph-based descriptions containing complex statistical data.

2. Essential Percentage Formulas

Percentage calculations form the backbone of Data Interpretation questions.

- **Percentage Change:**

$$\% \text{ Change} = \frac{\text{Final Value} - \text{Initial Value}}{\text{Initial Value}} \times 100$$

- **Percentage Point Difference:**

$$\text{Difference} = \text{Percentage}_1 - \text{Percentage}_2$$

- **Percentage Distribution:**

$$\text{Share } (\%) = \frac{\text{Part Value}}{\text{Total Value}} \times 100$$

3. Averages and Growth Rates

Weighted Average

When combining groups of different sizes:

$$\bar{x}_{\text{combined}} = \frac{n_1\bar{x}_1 + n_2\bar{x}_2 + \cdots + n_k\bar{x}_k}{n_1 + n_2 + \cdots + n_k}$$

Compound Annual Growth Rate (CAGR)

To measure growth over multiple time periods:

$$\text{CAGR} = \left(\frac{\text{Ending Value}}{\text{Beginning Value}} \right)^{\frac{1}{n}} - 1$$

where n is the number of years.

4. Ratio and Proportion Shortcuts

- **Ratio Comparison:** To compare $\frac{A}{B}$ and $\frac{C}{D}$, cross-multiply $A \times D$ and $B \times C$. If $AD > BC$, then $\frac{A}{B} > \frac{C}{D}$.
- **Alligation Rule:** Used to find the ratio in which two quantities at different prices are mixed to produce a mixture of a mean price.

$$\frac{Q_1}{Q_2} = \frac{C_2 - M}{M - C_1}$$

where $C_1 < M < C_2$.

5. Pro-Tips Approximation Techniques

1. **Fraction to Percentage Conversion:** Memorize fractions up to $\frac{1}{20}$ to save critical exam time (e.g., $\frac{1}{8} = 12.5\%$, $\frac{1}{6} = 16.67\%$).

2. **Approximation:** If options are widely spaced, round numbers to the nearest significant digit before computing.
3. **Unit Consistency:** Always check if data values are in thousands, millions, percentages, or absolute numbers before calculating ratios.